

REMARKS

Applicant respectfully requests reconsideration and allowance of all of the claims of the application. Claims 1-20 and 87-90 are presently pending. Claims amended herein are 1-20. No claims have been canceled. New claims 87-90 have been added.

Statement of Substance of Interview

The Examiner graciously talked with me, the undersigned representative for the Applicant, on August 28, 2008. Applicant greatly appreciates the Examiner's willingness to talk. Such willingness is invaluable to both of us in our common goal of an expedited prosecution of this patent application.

During the interview, we discussed how the claims differed from the cited references, namely Brendel and Westberg. Without conceding the propriety of the rejections and in the interest of expediting prosecution, I also proposed several possible clarifying amendments.

The Examiner was receptive to the proposals; however, the Examiner indicated that he would need to review the cited art more carefully and carry out another search, and requested that the proposed amendments be presented in writing. The Examiner also tentatively agreed that the rejection under 35 USC §101 would be overcome by the proposed amendments.

Applicant herein amends the claims in the manner discussed during the interview. Accordingly, Applicant submits that the pending claims are allowable over the cited art of record for at least the reasons discussed during the interview.

Formal Request for an Interview

If the Examiner's reply to this communication is anything other than allowance of all pending claims, then I formally request an interview with the Examiner. I encourage the Examiner to call me, the undersigned representative for the Applicant, so that we can talk about this matter so as to resolve any outstanding issues quickly and efficiently over the phone.

Please contact me to schedule a date and time for a telephone interview that is most convenient for both of us. While email works great for me, I welcome your call as well. My contact information may be found on the last page of this response.

Claim Amendments and Additions

Without conceding the propriety of the rejections herein and in the interest of expediting prosecution, Applicant has amended claims 1-20 herein. Applicant amends these claims to address the rejections under §112 and to clarify the claimed features. Such amendments are made to expedite prosecution and more quickly identify allowable subject matter, and should not be construed as further limiting the claimed invention in response to the cited references.

Claims 1-20 are amended. The amendments to these claims are fully supported by the disclosure and do not constitute new matter. For example, support for the amendments to claims 1 and 11 is found in the specification at least at paragraphs 0373 and 0377 of the published present application, US2005/0055435. Support for the amendments to claim 2 is found in the

specification at least at paragraphs 0356 and 0372. Support for the amendments to claim 3 is found at least at paragraphs 0394 and 0400-0402. Support for the amendments to claim 4 is found in the specification at least at paragraph 0372. Support for the amendments to claim 5 is found at least at paragraphs 0390 and 0391. Support for the amendments to claims 7, 17 and 18 is found at least at paragraphs 0374, 0400, 0417 and 0430. Support for the amendments to claims 8 and 13 is found at least at paragraphs 0373 and 0394. Support for the amendments to claim 9 is found at least at paragraphs 0416 and 0430. Support for the amendments to claims 10, 19 and 20 is found at least at paragraph 0415.

Furthermore, Applicant adds new claims 87-90 herein, which are directed towards the same invention as claims 1-20. These new claims are fully supported by the disclosure and therefore do not constitute new matter. For example, support for new claims 88 and 89 is found at the same location as for claims 1 and 11, respectively. Support for new claims 87 and 90 is found, for example, at paragraphs 0373, 0374, 0390, 0394, 0417 and 0430.

Substantive Matters

Claim Rejections under § 101

Claims 1-20 stand rejected under 35 USC § 101. Applicant respectfully traverses this rejection. Furthermore, claims 1-20 have been amended to read one or more processor-accessible *storage* media. In light of the amendments presented herein, Applicant respectfully submits that these claims comply with the patentability requirements of § 101 and that the § 101 rejections should be withdrawn. Applicant further asserts that these claims are allowable. Accordingly, Applicant asks the Examiner to withdraw these rejections.

If the Examiner maintains the rejection of these claims, then Applicant requests additional guidance as to what is necessary to overcome the rejection.

Claim Rejections under § 102 and § 103

The Office Action rejects claims 1-6 and 11-17 under § 102. For the reasons set forth below, the Office Action has not shown that the cited references anticipate the rejected claims.

In addition, the Office Action rejects claims 7-10 and 18-20 under § 103. For the reasons set forth below, the Office Action has not made a prima facie case showing that the rejected claims are obvious.

Accordingly, Applicant respectfully requests that the § 102 and § 103 rejections be withdrawn and the case be passed along to issuance.

The Office Action's rejections are based upon the following references alone or in combination:

- **Brendel:** *Brendel, et al.*, US Patent No. 5,774,660 (issued June 30, 1998); and
- **Westberg:** *Westberg*, US Patent No. 6,041,054 (issued March 21, 2000).

Overview of the Application

The Application describes a technology for a connection migrator that is configured to migrate connections away from the device. The connection migrator is capable of precipitating a compilation of protocol state for a connection across a protocol stack. The connection migrator is adapted to aggregate the compiled protocol state with data for the connection into an aggregated connection state and send the aggregated connection state toward a target device. In an exemplary implementation, processor-executable instructions direct a device to perform actions including: obtaining at least a portion of a source/destination pair from a packet; accessing an encapsulation mapping table using the at least a portion of the source/destination pair to locate an encapsulation mapping entry; extracting a flow identifier from the encapsulation mapping entry; and replacing part of the packet with the flow identifier to produce an encapsulated packet.

Cited References

The Office Action cites Brendel as the primary reference in the anticipation-based and obviousness-based rejections. The Office Action cites Westberg as a secondary reference in the obviousness-based rejections.

Brendel

Brendel describes a technology for load balancer that receives all requests from clients because they use a virtual address for the entire site. The load balancer makes a connection with the client and waits for the URL from the client. The URL specifies the requested resource. The load balancer waits to perform load balancing until after the location of the requested resource is known. The connection and URL request are passed from the load balancer to a second node having the requested resource. The load balancer re-plays the initial connection packet sequence to the second node, but modifies the address to that for the second node.

Westberg

Westberg describes a technology for employing asynchronous transfer mode (ATM) adaption layer two (AAL2) minicells as a bearer. Bandwidth utilization and transmission efficiency may be further enhanced by mapping one or more data fields from the header portion of the IP data packets into one or more look-up tables and then transporting the look-up table addresses in the AAL2 minicell headers rather than the data associated with the one or more data fields in the IP data packet headers.

Anticipation and Obviousness Rejections

Applicant submits that the anticipation rejections are not valid because, for each rejected claim, no single reference discloses each and every element of that rejected claim.¹ Furthermore, the elements disclosed in the single reference are not arranged in the manner recited by each rejected claim.² Applicant further submits that the obviousness rejection cannot be maintained for the reasons discussed below.

The Office Action rejects claims 1-6 and 11-17 under 35 USC § 102(b) as being anticipated by Brendel, and claims 7-10 and 18-20 under 35 USC § 103(a) as being obvious over Brendel in view of Westberg. Applicant respectfully traverses the rejection of these claims. Based on the reasons given below, Applicant asks the Examiner to reconsider and withdraw the rejection of these claims.

Independent Claims 1 and 88

Applicant submits that Brendel does not anticipate amended claim 1 because Brendel does not disclose the following elements as recited in this claim (with emphasis added):

...accepting a connection at the first device;

receiving data at the first device as a result of accepting the connection;

¹ "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); also see MPEP §2131.

² See *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

aggregating a connection state for the connection at the first device by aggregating a protocol state of a first protocol stack and the data to constitute a binary blob; and

sending the connection state for injection into a second protocol stack at a second device by sending the binary blob including the protocol state and the data to the second device, whereby the connection is transferred to the second device.

According to Applicant's invention, a connection is accepted at the first device, and data is received at the first device. A connection state for the connection is aggregated at the first device by aggregating a protocol state of a first protocol stack and the data to constitute a binary blob. The connection state is sent to the second device for injection into a second protocol stack at a second device by sending the binary blob including the protocol state and the data, whereby the connection is transferred to the second device.

Brendel, on the other hand, fails disclose aggregating a protocol state of a first protocol stack and the data to constitute a binary blob. The Office Action asserts at Page 7 that Brendel teaches bundling a connection state with data to produce a binary blob, citing column 12, lines 30-54 of Brendel. However, this portion of Brendel discloses that the load balancer transfers the state of the connection to the assigned server in a process the inventors call "TCP state migration" (col. 12, lines 38-40). TCP state migration 120 is performed by the load balancer playing back the SYN packet received from the browser and stored by the load balancer (col. 12, lines 46-48). The server responds with a SYN/ACK packet, which is intercepted and directed to the load balancer and not sent to

the browser (col. 12, lines 48-50). The load balancer then sends the browser's stored ACK packet to the assigned server, and the assigned server is then connected directly to the browser, having the same TCP state as was established with the load balancer (col. 12, lines 50-54). The load balancer then sends the packet(s) containing the URL request to the assigned server as a packet PUSH (col. 12, lines 55-56).

Accordingly, as also discussed at col. 11, line 67, through col. 12, line 2 of Brendel, the packets received by the load balancer are stored and then played back to the assigned server one by one in the order in which they were received. In Applicant's invention, however, as recited in amended claim 1, the connection state is aggregated by aggregating a protocol state of a first protocol stack and the data to constitute a binary blob. The aggregated connection state is sent to the second device for injection into a second protocol stack at a second device by sending the binary blob to the second device. Thus, under Applicant's invention, the packets are not stored by the load balance and then played back one-by-one to the assigned server, as disclosed by Brendel.

Consequently, Brendel does not disclose all of the elements and features of Applicant's claim 1. Further, Westberg fails to make up for the shortcomings in Brendel discussed above. Accordingly, Applicant respectfully asks the Examiner to withdraw the rejection of claim 1. New independent claim 88 includes limitations similar to those discussed above, and is allowable under a similar rationale.

Dependent Claims 2-10

These claims ultimately depend upon independent claim 1. As discussed above, claim 1 is allowable. It is axiomatic that any dependent claim which depends from an allowable base claim is also allowable. Additionally, some or all of these claims may also be allowable for additional independent reasons.

For example, amended dependent claim 3 includes sending the binary blob asynchronously to a connection migrator component at the second device, wherein the connection migrator component is configured to received the binary blob as a bundle, reassemble the connection state from the binary blob, and infuse the connection state into the second protocol stack at the second device. As discussed above, Brendel discloses that the load balancer replays the initial connection packet sequence to the assigned server. Thus, Brendel teaches only synchronous communication since the load balancer does not send the browser's stored ACK packet to the assigned server until the assigned server has returned a SYN/ACK packet in response to an initial SYN packet sent by the load balancer (col. 12, lines 46-54). Accordingly, Applicant respectfully submits that Brendel fails to disclose this aspect of Applicant's claim 3, including sending a binary blob asynchronously. Westberg fails to make up for these shortcomings in Brendel. Additionally, Brendel, Westberg and the other art of record fail to teach or suggest a connection migrator component at the second device that is configured to received the binary blob as a bundle, reassemble the connection state from the binary blob, and infuse the connection state into the second

protocol stack at the second device, as also recited in Applicant's amended claim 3. Accordingly, Applicant respectfully submits that claim 3 is allowable.

Furthermore, amended claim 4 includes compiling the protocol state from the first protocol stack for use in offloading the connection state as a binary blob, wherein the compiled protocol state includes destination and source ports and IP addresses. As discussed above, Applicant respectfully submits that Brendel does not disclose compiling a protocol state that includes destination and source ports and IP addresses. Instead, Brendel discloses that packets are stored and played back to the assigned server. Westberg fails to make up for these shortcomings in Brendel. Accordingly, Applicant respectfully submits that dependent claim 4 is also allowable over Brendel, Westberg and the other art of record.

Additionally, amended claim 7 includes bundling the connection state with mapping for a flow identifier that corresponds to the connection to produce the binary blob, and transmitting the binary blob having the flow identifier mapping bundled therein from the first device to the second device. Brendel does not teach or suggest this aspect of Applicant's invention. Westberg fails to make up for these shortcomings in Brendel, and claim 7 is therefore allowable.

Further, amended claim 10 includes forwarding subsequent packets for the connection to the second device using a flow identifier to encapsulate the subsequent packets, said encapsulated subsequent packets including the flow identifier in source and destination port fields of a TCP header. Brendel fails to teach or suggest this aspect of Applicant's invention. Westberg teaches using an IP/PPP data packet header to include a session context/connection ID (col. 6,

lines 4-62. However, Westberg fails to teach or suggest that a flow identifier is included in source and destination port fields of a TCP header. Accordingly, Applicant respectfully submits that claim 10 is allowable.

The remaining dependent claims not discussed above may be similarly distinguished from Brendel or the combination of Brendel and Westberg, and Applicant respectfully submits that these claims are also in condition for allowance.

Independent Claims 11 and 89

Applicant submits that Brendel also does not anticipate amended claim 11 because Brendel does not disclose the following elements as recited in this claim (with emphasis added):

...accepting a connection at the first device;

receiving data at the first device as a result of accepting the connection;

aggregating a connection state for the connection at the first device by aggregating a protocol state of a first protocol stack and the received data to constitute an aggregated connection state;

sending the aggregated connection state asynchronously from the first device to the second device;

receiving the aggregated connection state asynchronously at the second device, whereby the aggregated connection state comprised of the

protocol state and the received data is received intact at the second device;

injecting the aggregated connection state for the connection into a network stack at the second device; and

continuing the connection at the second device using the injected connection state.

According to this aspect of Applicant's invention, a connection is accepted at the first device, and data is received at the first device. A connection state for the connection is aggregated at the first device by aggregating a protocol state of a first protocol stack and the data to constitute an aggregated connection state. The aggregated connection state is sent asynchronously from the first device and received asynchronously by the second device for injection into a network stack at a second device, whereby the connection is continued.

Brendel, on the other hand, fails disclose aggregating a protocol state of a first protocol stack and the received data to constitute an aggregated connection state. The Office Action asserts at Page 3 with respect to the rejection of claim 3 that Brendel teaches aggregating a connection state from a protocol state and data to produce an aggregated connection state, citing column 12, lines 38-54 of Brendel. However, this portion of Brendel discloses that the load balancer transfers the state of the connection to the assigned server in a process the inventors call "TCP state migration" (col. 12, lines 38-40). TCP state migration 120 is performed by the load balancer playing back the SYN packet received from the browser and stored by the load balancer (col. 12, lines 46-48). The server responds with a SYN/ACK packet, which is intercepted and directed to the load

balancer and not sent to the browser (col. 12, lines 48-50). The load balancer then sends the browser's stored ACK packet to the assigned server, and the assigned server is then connected directly to the browser, having the same TCP state as was established with the load balancer (col. 12, lines 50-54). The load balancer then sends the packet(s) containing the URL request to the assigned server as a packet PUSH (col. 12, lines 55-56).

Accordingly, as discussed above, with respect to the rejection of claim 1, the packets of Brendel are stored by the load balancer and then played back to the assigned server one by one in their original order. In Applicant's invention however, as recited in amended claim 1, the connection state is aggregated by aggregating a protocol state of a first protocol stack and the data, and the aggregated connection state is sent and received asynchronously. Thus, under Applicant's invention, the packets are not stored by the load balance and then played back to the assigned server one by one in their original order, as disclosed by Brendel. As discussed above, Brendel discloses that the load balancer replays the initial connection packet sequence to the assigned server. Thus, Brendel teaches only synchronous communication since the load balancer does not send the browser's stored ACK packet to the assigned server until the assigned server has returned a SYN/ACK packet in response to an initial SYN packet sent by the load balancer (col. 12, lines 46-54). Accordingly, Applicant respectfully submits that Brendel fails to disclose this aspect of Applicant's claim 11, including sending an aggregated connection state asynchronously.

Consequently, Brendel does not disclose all of the elements and features of Applicant's claim 11, as amended. Further, Westberg fails to make up for the

shortcomings in Brendel discussed above. Accordingly, Applicant asks the Examiner to withdraw the rejection of claim 11. New independent claim 89 includes limitations similar to those discussed above, and is allowable under a similar rationale.

Dependent Claims 12-20

These claims ultimately depend upon independent claim 11. As discussed above, claim 11 is allowable. It is axiomatic that any dependent claim which depends from an allowable base claim is also allowable. Additionally, some or all of these claims may also be allowable for additional independent reasons for the reasons discussed above relative to claims 1-10.

New Independent Claims 87 and 90

New independent claims 87 and 90 include limitations similar to those discussed above with respect to claim 1, and are allowable under a similar rationale. Furthermore, these claims include that the binary blob is sent asynchronously from the first device to the second device. As discussed above with respect to dependent claim 3 neither Brendel, nor Westberg teach or suggest this aspect of Applicant's invention. Furthermore, these claims also include the following limitations (with emphasis added):

...accepting a connection at the first device by sending an acknowledgment packet to a requester in response to a connection-requesting packet;

receiving data for the connection at the first device from the requester;

determining, by the first device, the second device to which to migrate the connection from among a plurality of second devices, based upon the received data;

compiling a protocol state for the connection from a first protocol stack at the first device;

aggregating a connection state for the connection by aggregating the compiled protocol state and the received data to constitute a binary blob;

bundling a mapping for a flow identifier into the binary blob;

sending the connection state from the first device by asynchronously sending the binary blob to the second device;

receiving the connection state as the bundled binary blob at the second device;

unbundling the aggregated connection state and the mapping for the flow identifier at a level that is below a second protocol stack at the second device;

injecting the connection state by the connection migrator component into the second protocol stack at the second device; and

continuing the connection at the second device using the injected connection state.

Thus, Applicant's invention includes bundling a mapping for a flow identifier into the binary blob, sending the connection state from the first device by asynchronously sending the binary blob to the second device, receiving the connection state as the bundled binary blob at the second device, and unbundling the aggregated connection state and the mapping for the flow

identifier at a level that is below a second protocol stack at the second device before injection into the second protocol stack. This aspect of Applicant's invention is neither taught nor suggested by Brendel, Westberg, or the other art of record. Accordingly, Applicant respectfully submits that claims 87 and 90 are allowable for this aspect.

Conclusion

All pending claims are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the application. If any issues remain that prevent issuance of this application, the **Examiner is urged to contact me before issuing a subsequent Action.** Please call or email me at your convenience.

Respectfully Submitted,

Lee & Hayes, PLLC
Representatives for Applicant

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Dated: August 28, 2008

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